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SunSet xDSL MRD
DATE : 10/30/97
Revision: Draft 4
Section 4 Revision: Draft 1
Author: SK
Distribution: KC, PM, CP, TD, MM, CW, WC, RK, RC

Comments by Paul Marshall

put page numbers on document

Section 4 User Interface:

4.1 Introduction Screen

The MAIN MENU that is prevalent in all existing SunSets does not exist for the xDSL. There is simply an Introduction Screen which remains until the user presses a specific key. The Intro Screen also reappears when the user presses the ESC key enough times (dependent on the screen user is in).

Please refer to the xDSL Keypad Layout shown in Section 4.2

Should always go somewhere where you can get something done at ~~the main~~ power up.

```
12345678901234567890123456789012
1                          12:30:55 1
2                                   2
3                                   3
4   (Sunrise Logo Here)             4
5                                   5
6          SunWare                  6
7          xDSL                     7
8                                   8
9                                   9
0   Press AUTO Key for auto test    0
1              OR                   1
2     Press appropriate key for     2
3          manual testing           3
4                                   4
5       Version 0.00 S/N 0001       5
6   SUNRISE TELECOM, Inc. 1997      6
12345678901234567890123456789012
```

INTRODUCTION SCREEN

1. Always stays on until user presses a functionality key.
2. Also appears when user presses ESC key in any menu to get out of a certain function.
3. Note: AUTO Key will be developed in the future.

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4.2 KEYPAD LAYOUT

xDSL KEYPAD LABEL.rev 1 10/28/97
SUNRISE TELECOM, INC. SIZE: 3.279" X 2.226" .07"R
Notes: refer to sample for colors.

What are the LEDs?

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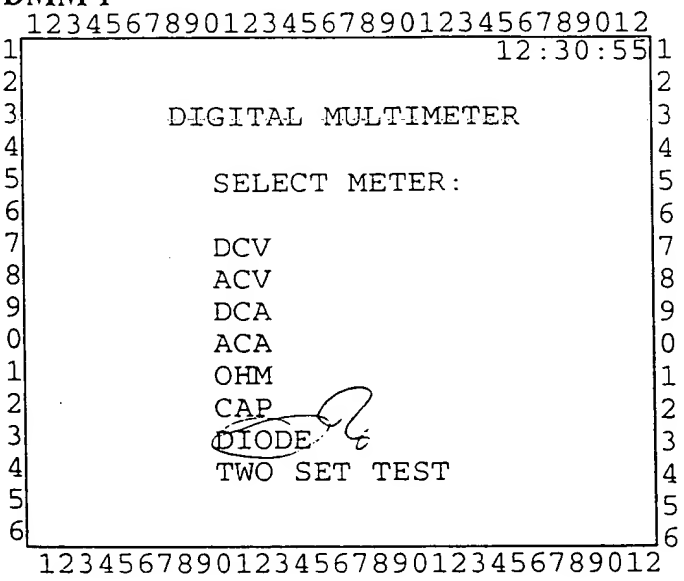
4.3 Digital Multimeter Screens

When the User puses the DMM key, the following screen appears :

DMM 1

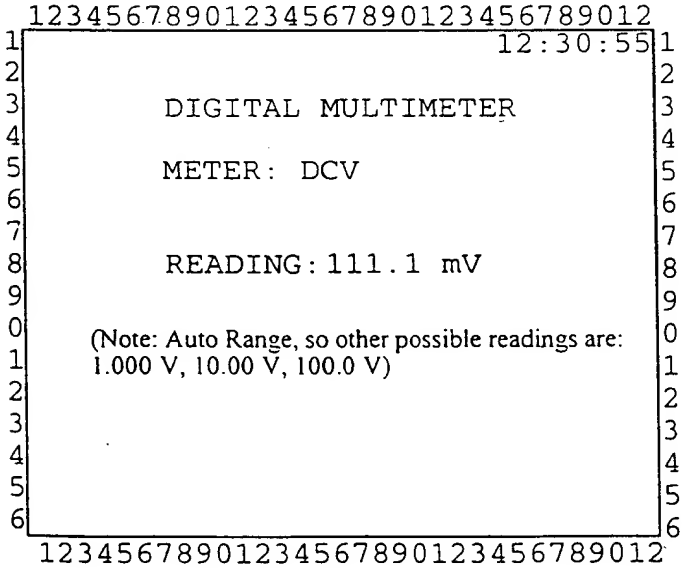


This is the DMM Main Menu Screen.
1. From here, if the user presses the ESC ke the INTRO Screen should appear.

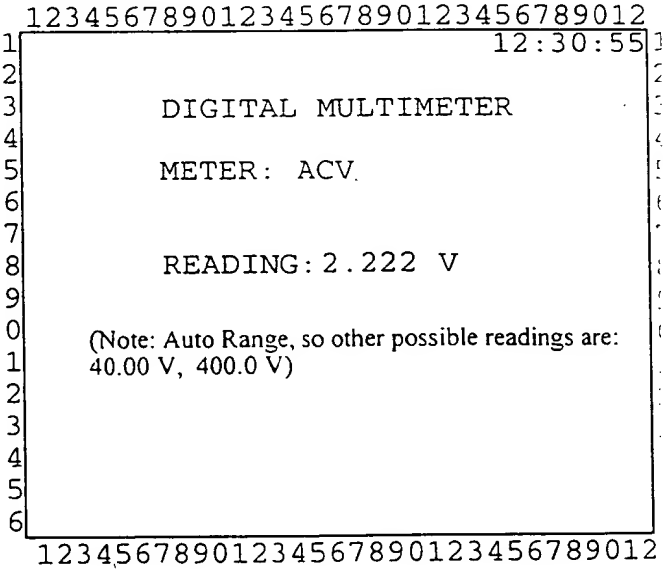
How does the user Know which two conductors measurement is made on? resistance s/b measured tip/ring tip/ground ring/ground

The following are designs for the rest of the DMM screens:

DMM 2



DMM 3



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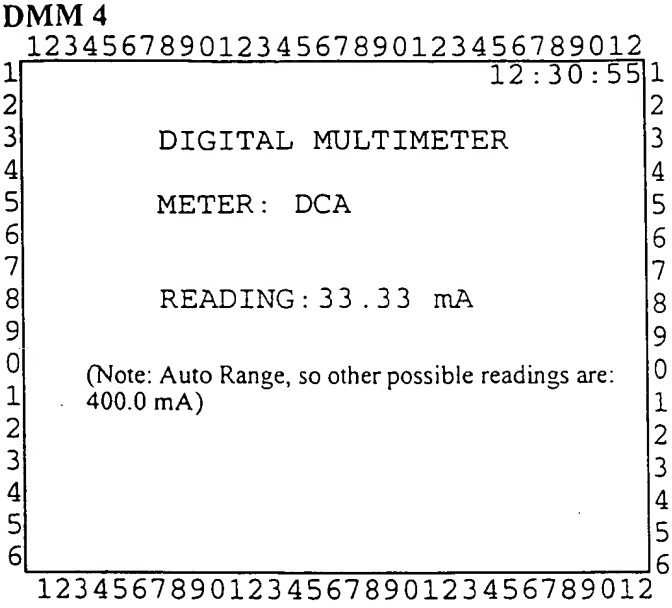
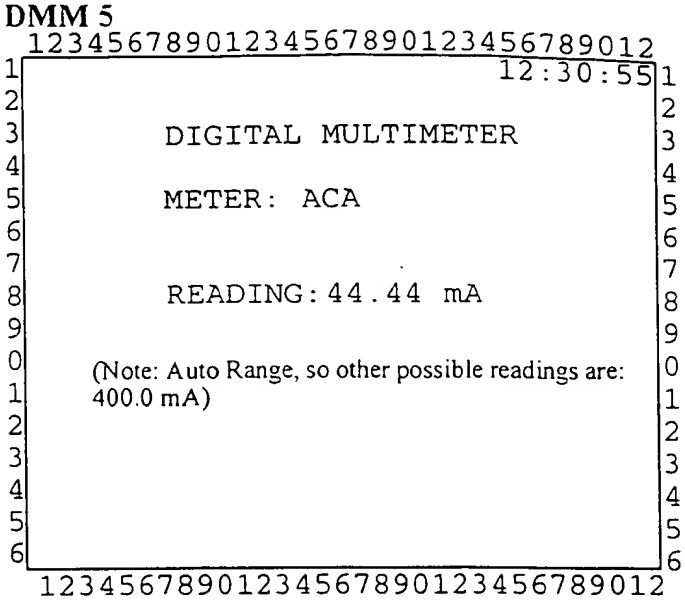
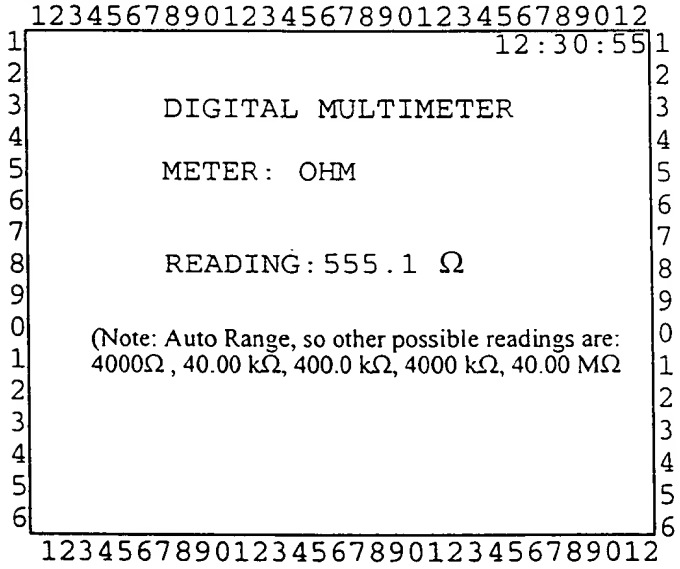
DMM 4



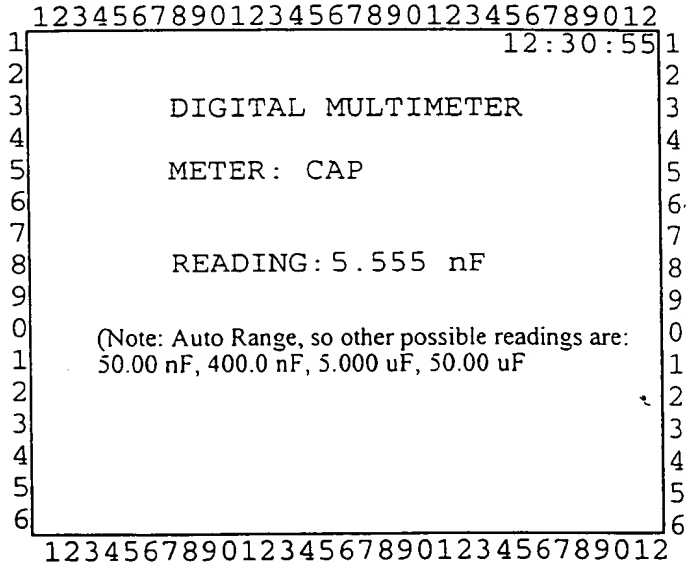
DMM 5



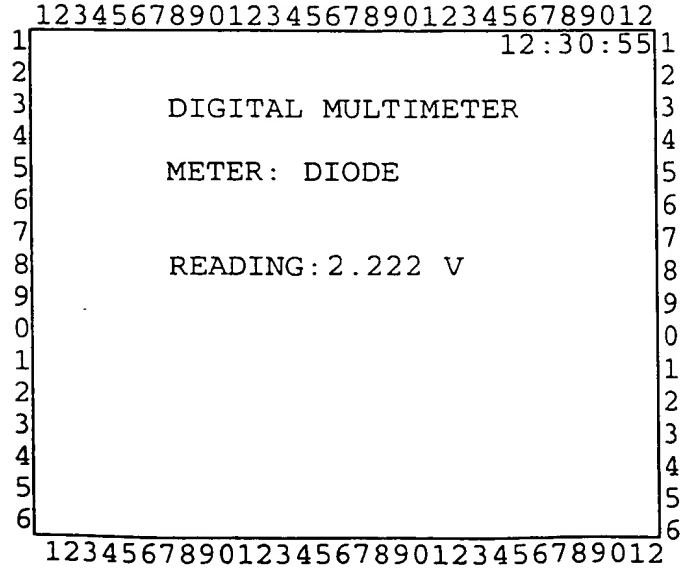
DMM 6



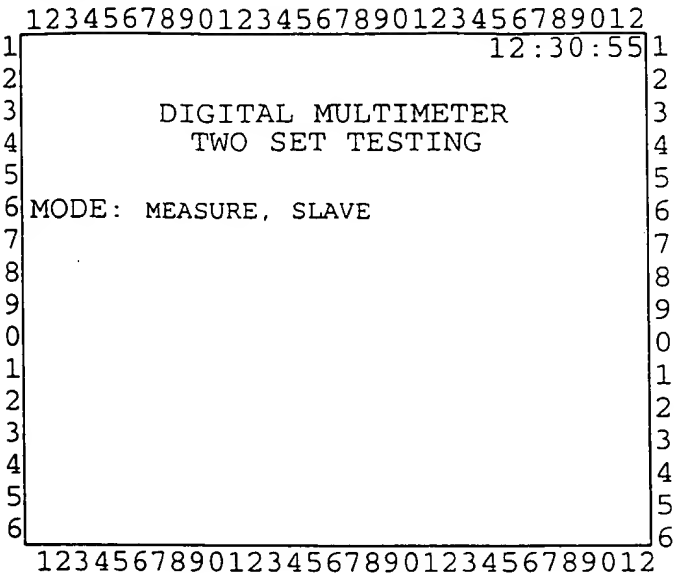
DMM 7



DMM 8



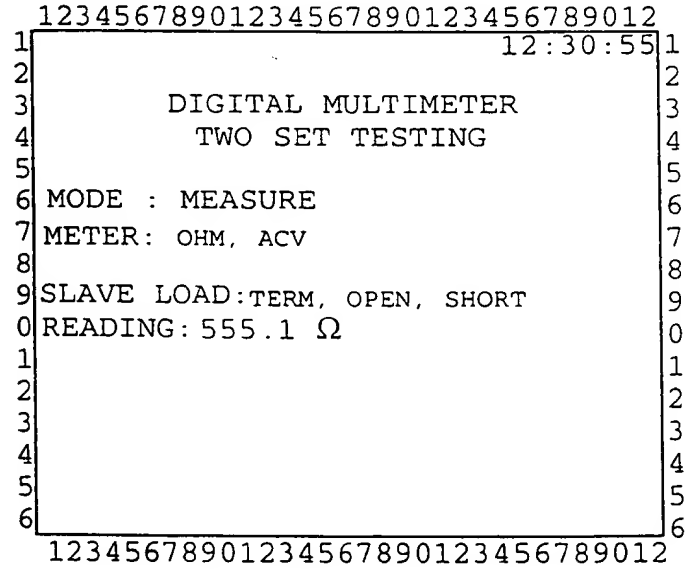
DMM 9a



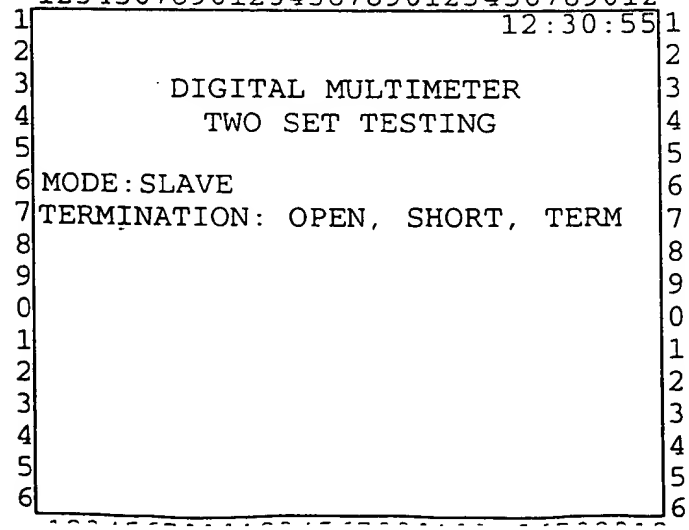
The DMM Two Set Testing is still in the planning stages. It is not crucial for the intial product release.

1. The idea is to have a second set provide the proper termination at the far end - open, short, term.
2. The "MEASURE" mode is the master unit. It performs measurements.
3. The "SLAVE" mode is the slave unit.

DMM 9b



DMM 9c



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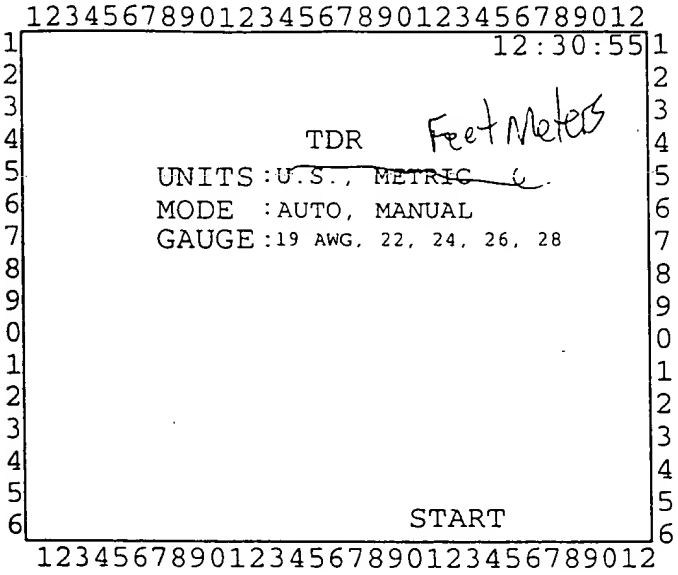
4.4 TDR Screens

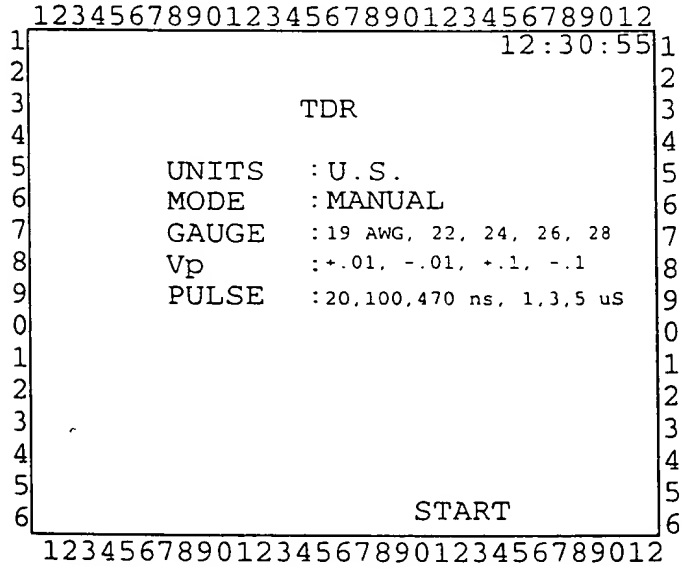
When the User pushes the TDR key, the following screen appears :

TDR 1



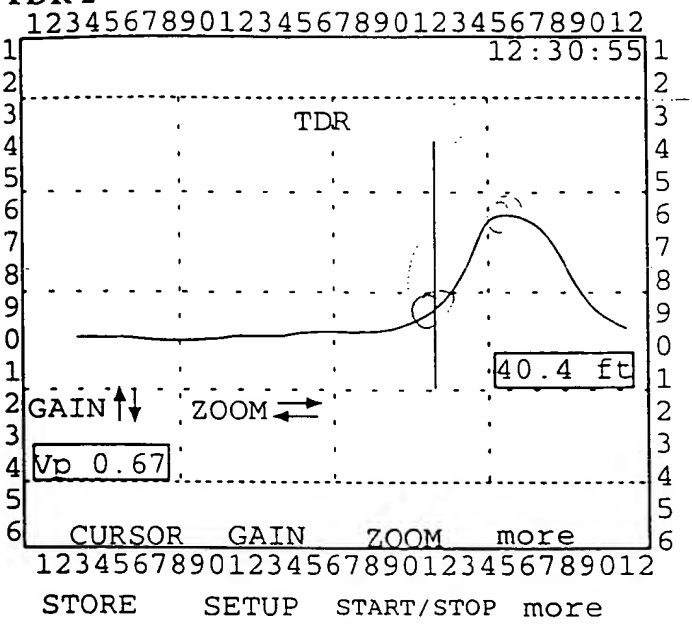
1. The User must first select desired units.
2. There are two modes: AUTO and MANUAL
3. For the AUTO mode, after entering the GAUGE, a START F4 key will appear. Pressing the "START" key will begin the test.

TDR 1a



4. For the MANUAL mode, the Vp and PULSE fields appear.
5. For Vp, the User can increase or decrese the value in .01 or .1 increments between a range of (0.4 to 0.99)
6. For PULSE width, user can select among six selections. (Tektronix TS100 offers 4 choices).
7. After the PULSE width is selected, the "START" F4 key will appear. Pressing this key will begin the test.

TDR 2

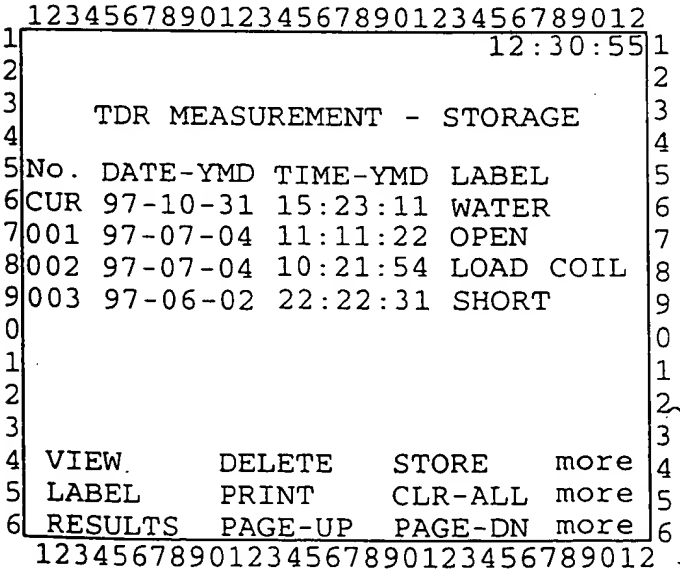


Note: The dotted lines are for reference only

1. The "START" key from the previous screen leads to this screen. The pulse is launched immediately and the reflection is shown.
2. The inital reflection should appear on Row 2, Column 4 whenever possible.
2. The User has immediate control of the vertical line cursor, using the right/left arrow keys. A distance readout is displayed corresponding to the cursor position.
3. The Vp is shown.
4. The GAIN can be changed by pressing the F2 key.
   a. This activates the UP arrow and DN arrow keys for adjusting the GAIN control.
   b. The GAIN ↑↓ will appear when F2 key is pressed, which alerts the user to use the up and down arrow keys.
5. The ZOOM can be accessed by pressing the F3 key. The LEFT and RIGHT arrow keys are activated for ZOOM control.
   a. The ZOOM ⇄ will appear when F3 key is pressed, which alerts the user to use the LEFT and RIGHT arrow keys.

How does it get out of these modes? Should they just be continuously active? How do you go from moving the cursor left/right to changing the zoom?

6. The CURSOR can be accessed at any time by pressing the CURSOR F1 key or by pressing the ESC key from the GAIN or ZOOM mode.
7. If "MANUAL" mode was selected, then a SETUP F-key will be available. This provides access to the TDR 1A screen.
8. At any time, the pulse can be launched again by pressing the START/STOP Key.



9. The User has the option to store results by pressing the STORE F1 key.
10. For the LABEL category, we need to implement soft key alphabet because no hard keys available.

How do I go back from here to other screen?

4.5 LOSS Measurement Screens

When the User pushes the LOSS key, the following screen appears :

LOSS 1

```
12345678901234567890123456789012
1                          12:30:55 1
2                                   2
3          LOSS MEASUREMENT         3
4                                   4
5          MODE: MEASURE, SEND      5
6          TONE: DMT, 10 khZ, 192 kHz, 6
7                256 kHz, 512 kHZ,  7
8                1.1 MHz, ALL       8
9                                   9
0                                   0
1                                   1
2                                   2
3                                   3
4                                   4
5                                   5
6                                   6
12345678901234567890123456789012
```

1. MEASURE Mode is for the Master Unit SEND mode is for the Slave Unit
2. The TONE is determined only by the MEASURE unit.
   a. DMT is all 256 carrier freq.
   b. ALL means 10, 192, 256, 512, 1.1 Mh

40 kHz - ISDN BRT
772 kHz - T1

This must be Fast and accurate

Rather than doing master/slave why not just cycle through the selected tones - Master/slave need not communicate. The sender & through the selected frequencies. The Slave Set, its for its start Measurer waits frequency, then g

Master Set

LOSS 2A

```
12345678901234567890123456789012
1                          12:30:55 1
2 >                           Idle < 2
3                                   3
4          LOSS MEASUREMENT         4
5                                   5
6          MODE: MEASURE            6
7          FREQUENCY: 192 kHz       7
8                                   8
9                                   9
0                                   0
1                                   1
2                                   2
3                                   3
4                                   4
5                                   5
6 CONNECT                           6
12345678901234567890123456789012
```

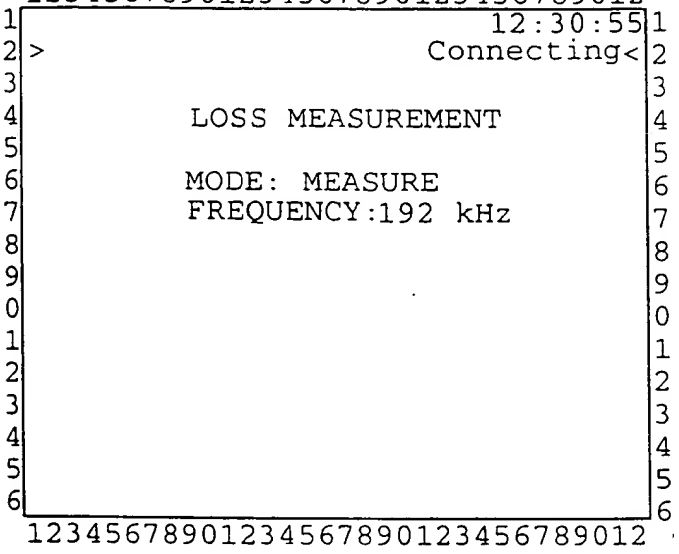
LOSS 2B

```
12345678901234567890123456789012
1                          12:30:55 1
2 >                           Idle < 2
3                                   3
4          LOSS MEASUREMENT         4
5                                   5
6          MODE: SEND               6
7          FREQUENCY: 192 kHz       7
8                                   8
9                                   9
0                                   0
1                                   1
2                                   2
3                                   3
4                                   4
5                                   5
6 CONNECT                           6
12345678901234567890123456789012
```

1. Notice Status Indication Area on Top right and left- Line 2.
   a. It shows "Idle" right now
2. Either side can initiate the CONNECT F1 key. This establishes the connection between Master and Slave.

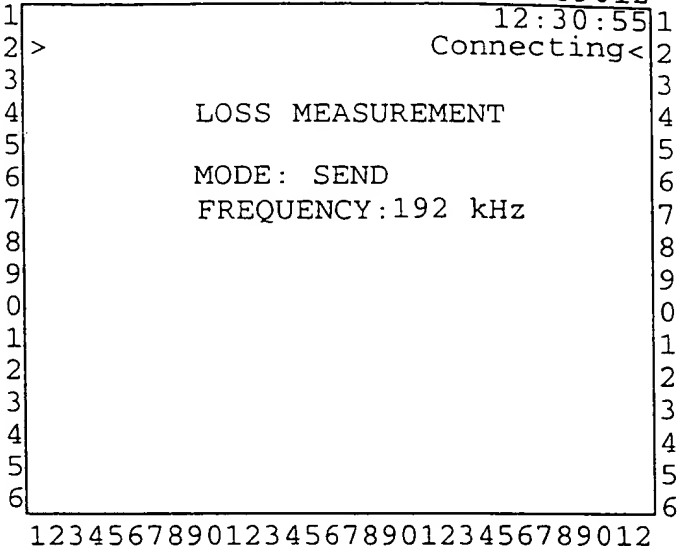
Master Set

LOSS 3A

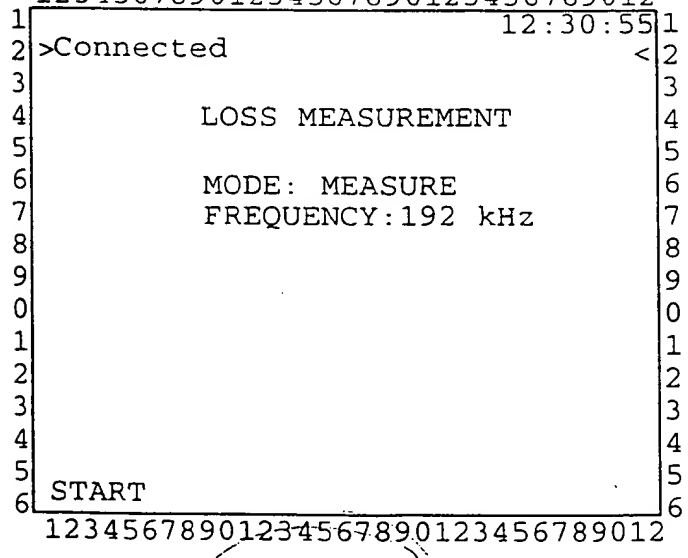


Slave Set

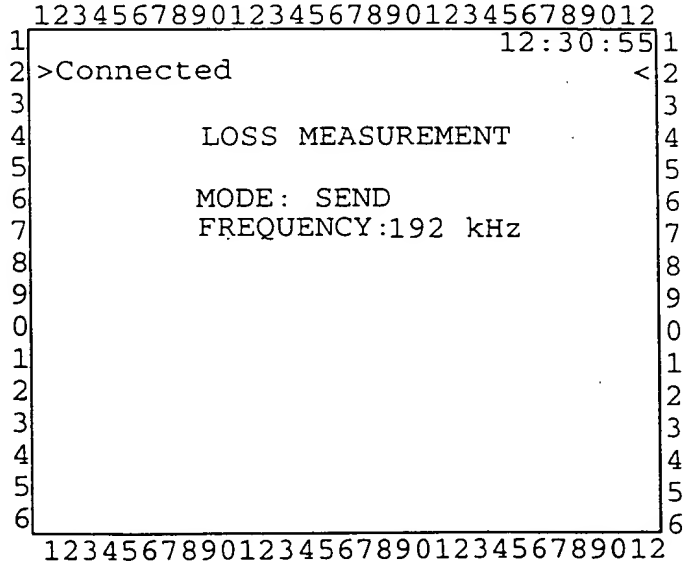
LOSS 3B



LOSS 4A



LOSS 4B



1. Pressing the START F1 Key initiates the test. also should start automatically after 3 secs

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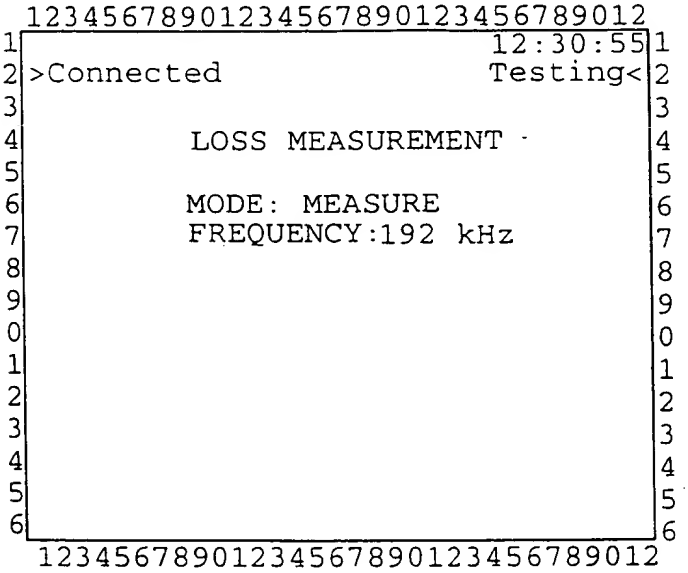
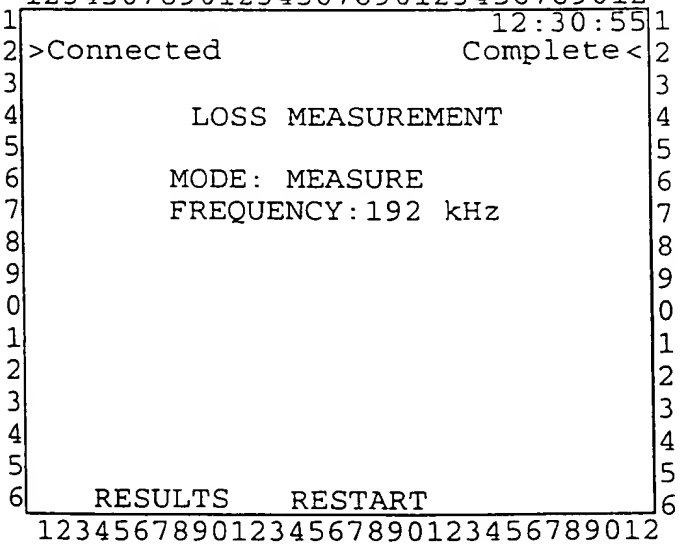
Master Set

LOSS 5A



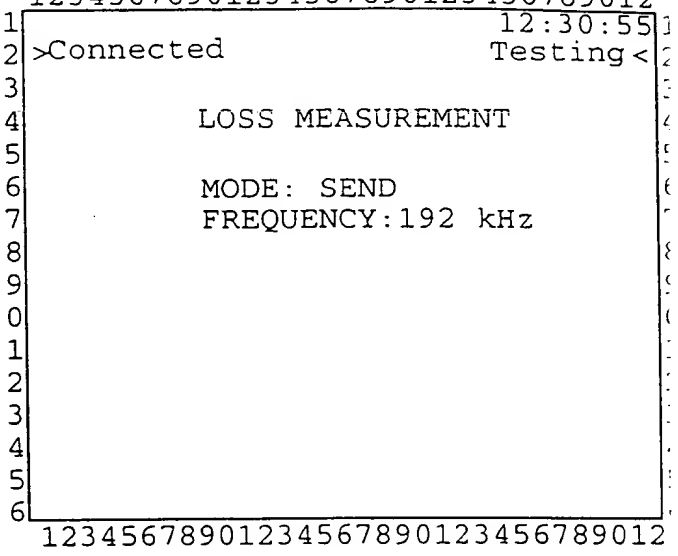
LOSS 6A



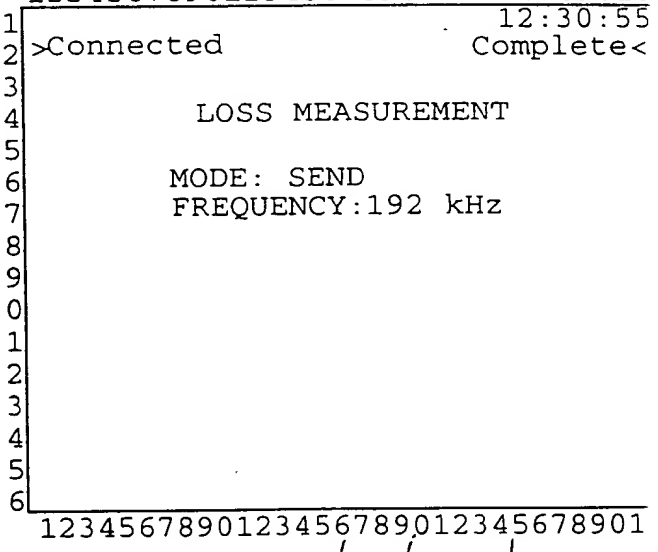
1. RESULTS F-Key leads to RESULTS screen.

Slave Set

LOSS 5B



LOSS 6B



Results should automatically display when measurement is complete

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4.6 NOISE Measurement Screens

When the User pushes the NOISE key, the following screen appears :

NOISE 1

```
12345678901234567890123456789012
1                          12:30:55 1
2                                   2
3          NOISE MEASUREMENT        3
4                                   4
5          TYPE: S/N, ~~WIDE~~ QUIET 5
6          MODE: MEASURE, (SEND)    6
7          TONE: DMT, 10 khZ, 192 kHz, 7
8                256 kHz, 512 kHZ,  8
9                1.1 MHz, ALL, WIDEBND 9
0                                   0
1                                   1
2                                   2
3                                   3
4                                   4
5                                   5
6                                   6
12345678901234567890123456789012
```

1. User first designates Signal to Noise (S/N) or Wideband (WIDE) measurement.
2. MEASURE Mode is for the Master Unit SEND mode is for the Slave Unit
3. The TONE is determined only by the MEASURE unit.
   a. DMT is all 256 carrier freq.
   b. ALL means 10, 192, 256, 512, 1.1 Mhz

only presented for S/N option. Define Filter characteristics for S/N measurement filter. For various noise freqs for QUIET measurement. WIDEBND means Filter input 4 KHz to 9 MHz.

No need for confirmation. Just step through the tones at a predetermined pace.

4.6.1 SIGNAL TO NOISE Measurement Screens

Master Set *Slave Set*

S/N 2A

```
12345678901234567890123456789012
1                          12:30:55 1
2 >                          Idle < 2
3                                   3
4          S/N MEASUREMENT          4
5                                   5
6          MODE: MEASURE            6
7          FREQUENCY: 192 kHz       7
8                                   8
9                                   9
0                                   0
1                                   1
2                                   2
3                                   3
4                                   4
5                                   5
6 CONNECT                           6
12345678901234567890123456789012
```

S/N 2B

```
12345678901234567890123456789012
1                          12:30:55 1
2 >                          Idle < 2
3                                   3
4          S/N MEASUREMENT          4
5                                   5
6          MODE: SEND               6
7          FREQUENCY: 192 kHz       7
8                                   8
9                                   9
0                                   0
1                                   1
2                                   2
3                                   3
4                                   4
5                                   5
6 CONNECT                           6
12345678901234567890123456789012
```

1. Notice Status Indication Area on Top right and left- Line 2.
   a, It shows "Idle" right now
2. Either side can initiate the CONNECT F1 key. This establishes the connection between Master and Slave.

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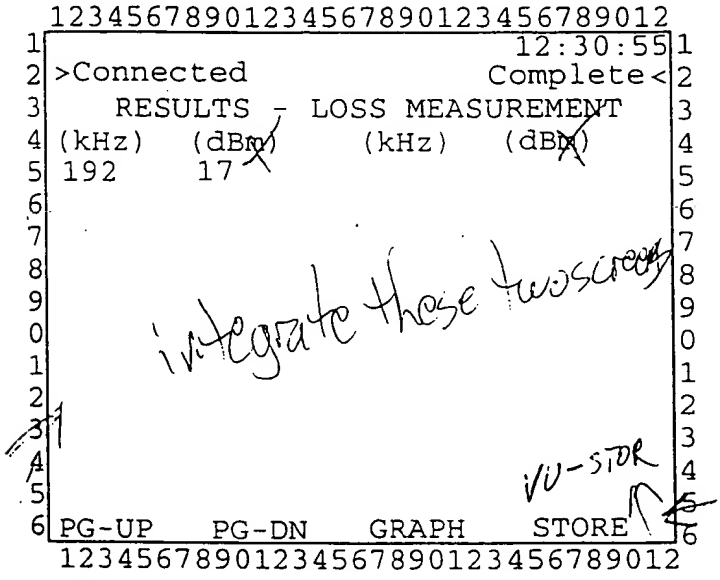
Master Set

LOSS 7A

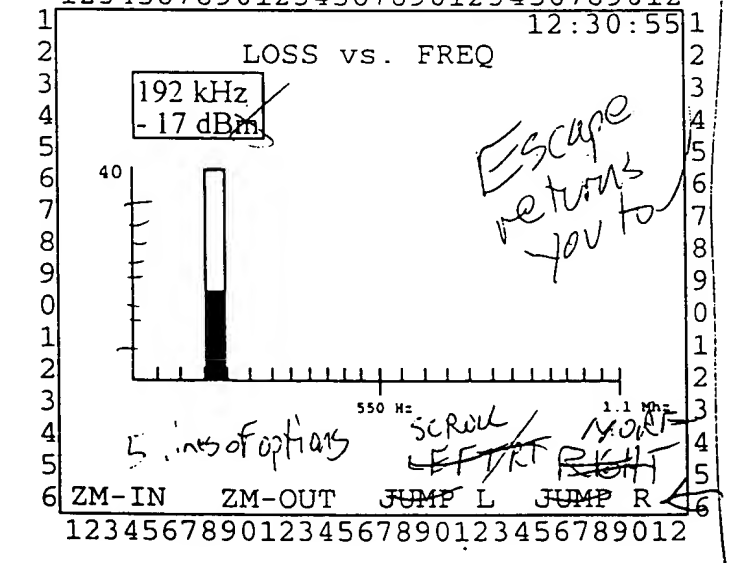


loss is measured in dB
power is measured in dBm

4 lines of options

vertical mode: 8x8 - 16x8 = 12
12x8 = 9
12 dB = 1 dot

LOSS 8A

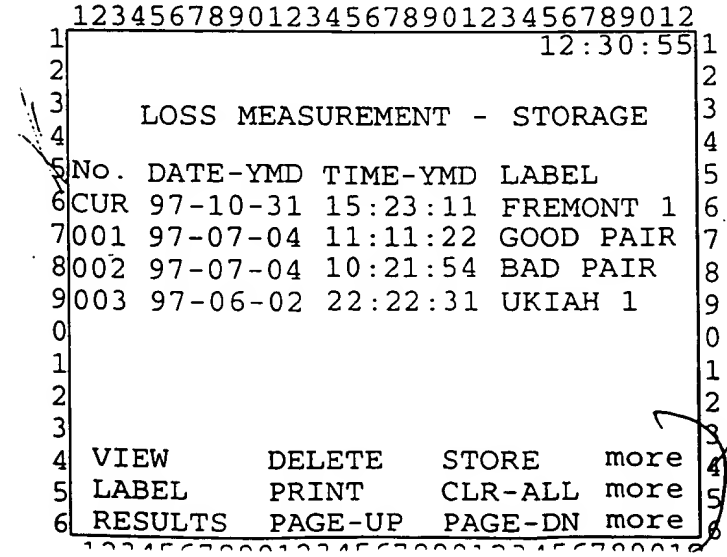


1. The GRAPH function key leads to this screen.
2. JUMP L = Jump Left
   JUMP R = Jump Right
   a. These function keys control the cursor.
   b. The readout is boxed above the graph
3. The first graph has range from 10 kHz to 1.1 Mhz
4. ZM-IN F-key zooms into narrow range. ZM-OUT F-key zooms back out.

Note: How many lines are possible? 60 to 70? This screen will be better defined later.

For DMT, make each frequency a dot, no spaces in between. 32x6 = 192 dots total. Zoom out mode is each 2 freq. for 1 dot (125 dots total), the greater of the two loss values is displayed.

LOSS 9A



1. The STORE function key leads to this screen.

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4.6 NOISE Measurement Screens

When the User pushes the NOISE key, the following screen appears :

NOISE 1

```
                                12:30:55

        NOISE MEASUREMENT

        TYPE: S/N, ~~WIDE~~ QUIET
        MODE: MEASURE, (SEND)
        TONE: DMT, 10 kHZ, 192 kHz,
              256 kHz, 512 kHZ,
              1.1 MHz, ALL, WIDEBND
```

1. User first designates Signal to Noise (S/N) or Wideband (WIDE) measurement.
2. MEASURE Mode is for the Master Unit SEND mode is for the Slave Unit
3. The TONE is determined only by the MEASURE unit.
   a. DMT is all 256 carrier freq.
   b. ALL means 10, 192, 256, 512, 1.1 Mhz

Only presented for S/N option
Define Filter characteristics for S/N measurement filter. For various noise freqs for QUIET measurements.
WIDEBND means filter input 5 KHz to 4 MHz.

No need for connection. Just step through the tones at a predetermined pace.

4.6.1 SIGNAL TO NOISE Measurement Screens

S/N 2A — *Master Set*

```
                                12:30:55
>                                  Idle<

        S/N MEASUREMENT

        MODE:  MEASURE
        FREQUENCY: 192 kHz








CONNECT
```

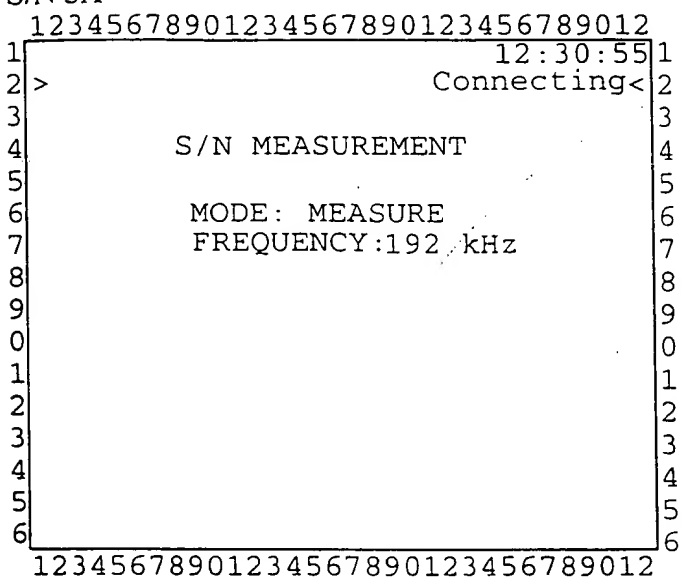
S/N 2B — *Slave Set*

```
                                12:30:55
>                                  Idle<

        S/N MEASUREMENT

        MODE:  SEND
        FREQUENCY: 192 kHz








CONNECT
```

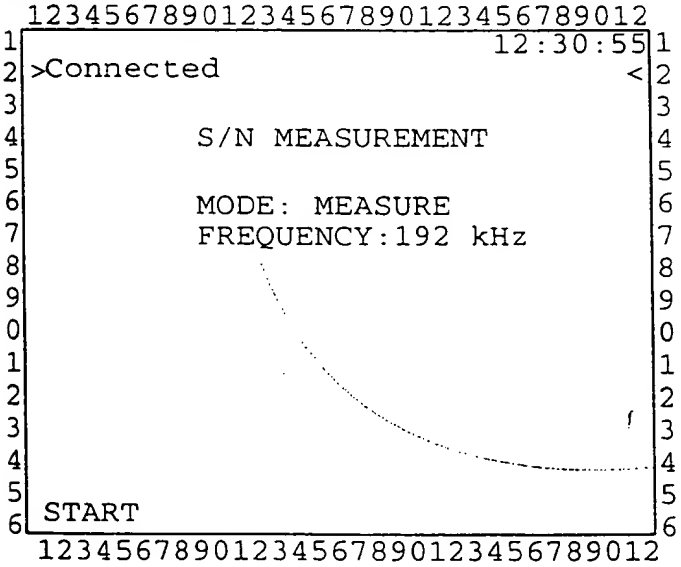
1. Notice Status Indication Area on Top right and left- Line 2.
   a, It shows "Idle" right now
2. Either side can initiate the CONNECT F1 key. This establishes the connection between Master and Slave.

Master Set

S/N 3A

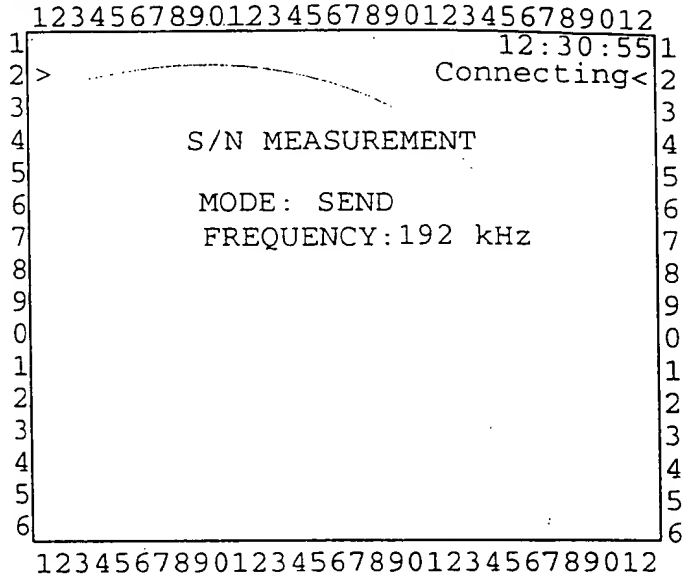


S/N 4A

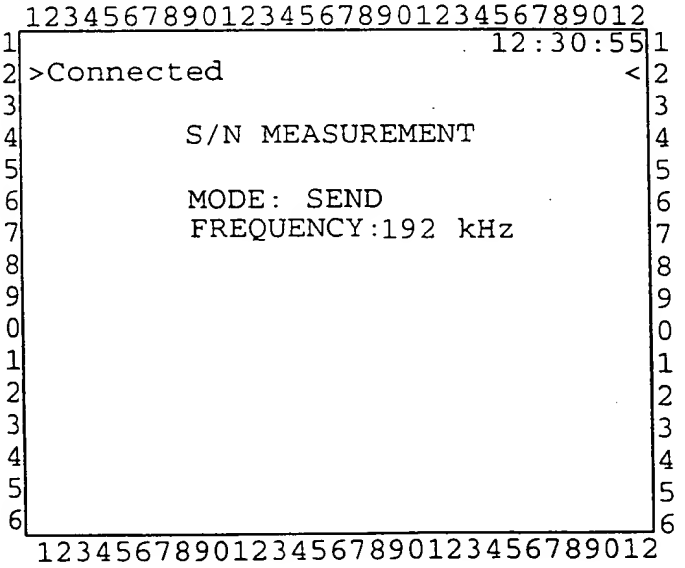


Slave Set

S/N 3B



S/N 4B



just show the result. "MEASURING" Say before result is ready

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Master Set

S/N 5A

```
                                        12:30:55
>Connected                             Testing<

          S/N MEASUREMENT

          MODE: MEASURE
          FREQUENCY:192 kHz
```

S/N 6A

```
                                        12:30:55
>Connected                             Complete<

          S/N MEASUREMENT

          MODE: MEASURE
          FREQUENCY:192 kHz

     RESULTS    RESTART
```

just display the results

Slave Set

S/N 5B

```
                                        12:30:55
>Connected                             Testing<

          S/N MEASUREMENT

          MODE: SEND
          FREQUENCY:192 kHz
```

S/N 6B

```
                                        12:30:55
>Connected                             Complete<

          S/N MEASUREMENT

          MODE: SEND
          FREQUENCY:192 kHz
```

Shall it just have it send continuously until user escapes out.

Master Set

S/N 7A

```
  12345678901234567890123456789012
1 ┌──────────────────────────────┐ 1
2 │                      12:30:55│ 2
3 │>Connected          Complete< │ 3
4 │   RESULTS - S/N MEASUREMENT  │ 4
5 │(kHz)  (dB)     (kHz)  (dB)   │ 5
6 │192    32                     │ 6
7 │                              │ 7
8 │                              │ 8
9 │                              │ 9
0 │                              │ 0
1 │                              │ 1
2 │                              │ 2
3 │                              │ 3
4 │                              │ 4
5 │                              │ 5
6 │PG-UP   PG-DN   GRAPH   STORE │ 6
  └──────────────────────────────┘
  12345678901234567890123456789012
```

S/N 8A

```
  12345678901234567890123456789012
1 ┌──────────────────────────────┐ 1
2 │                      12:30:55│ 2
3 │         S/N vs. FREQ         │ 3
4 │ ┌──────────┐                 │ 4
5 │ │192 kHz   │                 │ 5
6 │ │- 32 dB   │                 │ 6
7 │ └──────────┘                 │ 7
8 │40                            │ 8
9 │ ▮                            │ 9
0 │ ▮                            │ 0
1 │ ▮                            │ 1
2 │ ▮                            │ 2
3 │ ▮                            │ 3
4 │ ▮                            │ 4
5 │ ▮                            │ 5
6 │ ▮ZM-IN  ZM-OUT  JUMP L  JUMP R│ 6
  └──────────────────────────────┘
  12345678901234567890123456789012
```

550 Hz … 1.1 Mhz

1. The GRAPH function key leads to this screen.
2. JUMP L = Jump Left
   JUMP R = Jump Right
   a. These function keys control the cursor.
   b. The readout is boxed above the graph
3. The first graph has range from 10 kHz to 1.1 Mhz
4. ZM-IN F-key zooms into narrow range. ZM-OUT F-key zooms back out.

Note: How many lines are possible? 60 to 70? This screen will be better defined later.

S/N 9A

```
  12345678901234567890123456789012
1 ┌──────────────────────────────┐ 1
2 │                      12:30:55│ 2
3 │   S/N MEASUREMENT - STORAGE  │ 3
4 │                              │ 4
5 │No. DATE-YMD TIME-YMD LABEL   │ 5
6 │CUR 97-10-31 15:23:11 FREMONT 1│ 6
7 │001 97-07-04 11:11:22 GOOD PAIR│ 7
8 │002 97-07-04 10:21:54 BAD PAIR │ 8
9 │003 97-06-02 22:22:31 UKIAH 1 │ 9
0 │                              │ 0
1 │                              │ 1
2 │                              │ 2
3 │                              │ 3
4 │ VIEW    DELETE   STORE   more│ 4
5 │ LABEL   PRINT    CLR-ALL more│ 5
6 │ RESULTS PAGE-UP  PAGE-DN more│ 6
  └──────────────────────────────┘
```

UNIFY

4.6.2 WIDEBAND NOISE Measurement Screens

When the User pushes the NOISE key, the following screen appears :

NOISE - WB 1

```
12345678901234567890123456789012
1                          12:30:55 1
2                                   2
3          NOISE MEASUREMENT        3
4                                   4
5          TYPE: S/N, WIDE          5
6          MODE: MEASURE, SEND      6
7          TONE: DMT, 10 khZ, 192 kHz, 7
8                256 kHz, 512 kHZ,  8
9                1.1 MHz, ALL       9
0                                   0
1                                   1
2                                   2
3                                   3
4                                   4
5                                   5
6                                   6
12345678901234567890123456789012
```

1. User designates Wideband Noise (WIDE) for TYPE.
2. MEASURE Mode is for the Master Unit SEND mode is for the Slave Unit
3. For TONE, only selection is DMT

This is a S/N measureme

Master Set

WB 2A

```
12345678901234567890123456789012
1                          12:30:55 1
2 >                        Idle<    2
3                                   3
4    WIDEBAND NOISE MEASUREMENT     4
5                                   5
6          MODE: MEASURE            6
7          FREQUENCY: DMT           7
8                                   8
9                                   9
0                                   0
1                                   1
2                                   2
3                                   3
4                                   4
5                                   5
6 CONNECT                           6
12345678901234567890123456789012
```

Slave Set

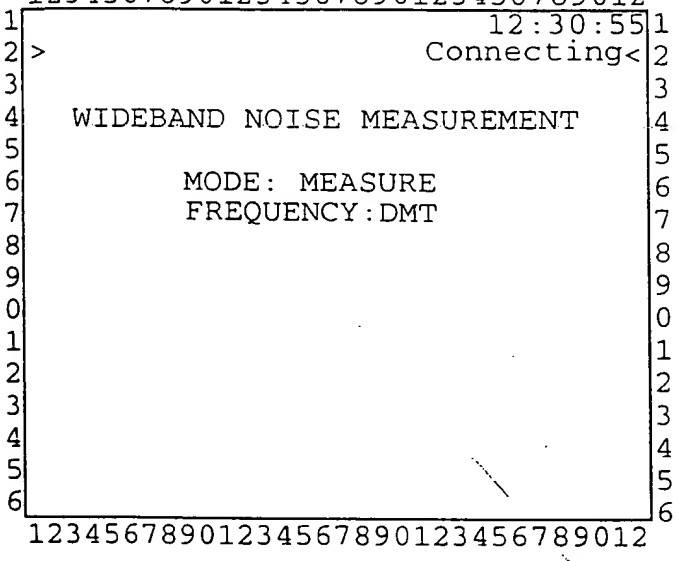
WB 2B

```
12345678901234567890123456789012
1                          12:30:55 1
2 >                        Idle<    2
3                                   3
4    WIDEBAND NOISE MEASUREMENT     4
5                                   5
6          MODE: SEND               6
7          FREQUENCY DMT            7
8                                   8
9                                   9
0                                   0
1                                   1
2                                   2
3                                   3
4                                   4
5                                   5
6 CONNECT                           6
12345678901234567890123456789012
```

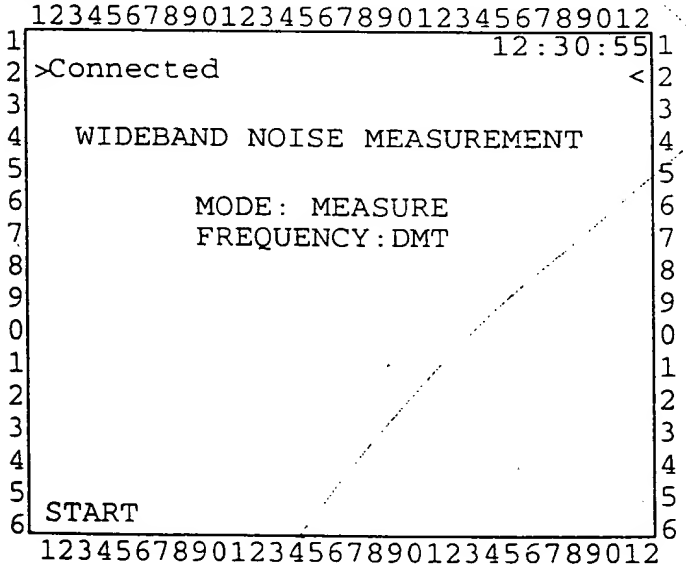
1. Notice Status Indication Area on Top right and left- Line 2.
   a, It shows "Idle" right now
2. Either side can initiate the CONNECT F1 key. This establishes the connection between Master and Slave.

Master Set

WB 3A

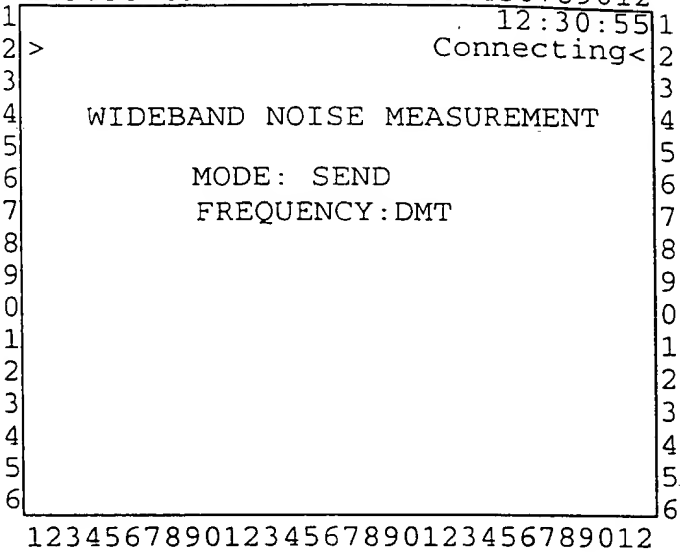


WB 4A

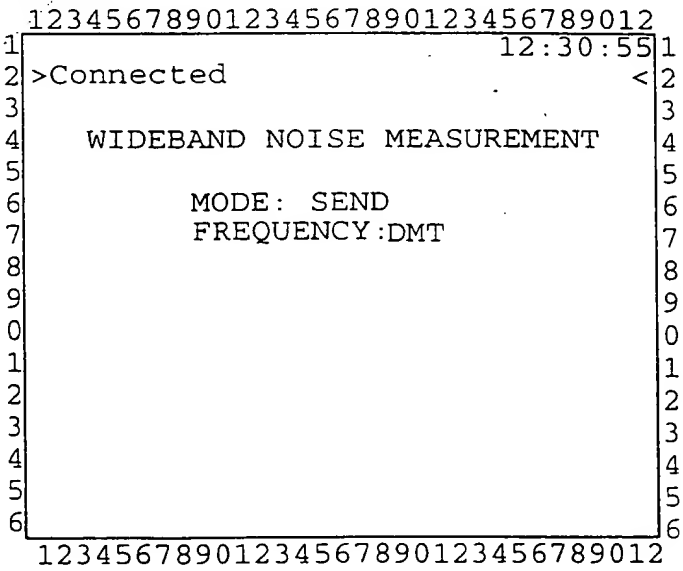


Slave Set

WB 3B



WB 4B



Master Set

WB 5A

```
12345678901234567890123456789012
1                          12:30:55 1
2 >Connected               Testing< 2
3                                   3
4   WIDEBAND NOISE MEASUREMENT      4
5                                   5
6         MODE: MEASURE             6
7         FREQUENCY:DMT             7
8                                   8
9                                   9
0                                   0
1                                   1
2                                   2
3                                   3
4                                   4
5                                   5
6                                   6
12345678901234567890123456789012
```

WB 6A

```
12345678901234567890123456789012
1                          12:30:55 1
2 >Connected               Complete< 2
3                                   3
4   WIDEBAND NOISE MEASUREMENT      4
5                                   5
6         MODE: MEASURE             6
7         FREQUENCY:DMT             7
8                                   8
9                                   9
0                                   0
1                                   1
2                                   2
3                                   3
4                                   4
5                                   5
6    RESULTS    RESTART             6
12345678901234567890123456789012
```

go immediately to results

Slave Set

WB 5B

```
12345678901234567890123456789012
1                          12:30:55 1
2 >Connected               Testing< 2
3                                   3
4   WIDEBAND NOISE MEASUREMENT      4
5                                   5
6         MODE: SEND                6
7         FREQUENCY:DMT             7
8                                   8
9                                   9
0                                   0
1                                   1
2                                   2
3                                   3
4                                   4
5                                   5
6                                   6
12345678901234567890123456789012
```

WB 6B

```
12345678901234567890123456789012
1                          12:30:55 1
2 >Connected               Complete< 2
3                                   3
4   WIDEBAND NOISE MEASUREMENT      4
5                                   5
6         MODE: SEND                6
7         FREQUENCY: DMT            7
8                                   8
9                                   9
0                                   0
1                                   1
2                                   2
3                                   3
4                                   4
5                                   5
6                                   6
12345678901234567890123456789012
```

Keeps stepping

through steps till ESC escapes

Master Set

WB 7A

```
12345678901234567890123456789012
1                          12:30:55 1
2                                   2
3     RESULTS - WB MEASUREMENT      3
4 (kHz)   (dB)      (kHz)   (dB)    4
5  10       5        54       5     5
6  14       6        58       6     6
7  18       5        62       5     7
8  22       6        66       6     8
9  26       5        70       5     9
0  30       6        74       6     0
1  34       5        78       5     1
2  38       6        82       6     2
3  42       5        86       5     3
4  46       6        90       6     4
5  50       5        94       5     5
6 PG-UP    PG-DN    GRAPH    STORE 6
12345678901234567890123456789012
```

unify

WB 8A

```
12345678901234567890123456789012
1                          12:30:55 1
2              WIDEBAND NOISE       2
3   192 kHz                         3
4   32 dB                           4
5                                   5
6   40                              6
7                                   7
8                                   8
9   20                              9
0                                   0
1                                   1
2                                   2
3                 550 kHz  1.1 Mhz  3
4                                   4
5                                   5
6 ZM-IN    ZM-OUT   JUMP L  JUMP R 6
12345678901234567890123456789012
```

1. The GRAPH function key leads to this screen.
2. JUMP L = Jump Left
   JUMP R = Jump Right
   a. These function keys control the cursor.
   b. The readout is boxed above the graph
3. The first graph has range from 10 kHz to 1.1 Mhz
4. ZM-IN F-key zooms into narrow range. ZM-OUT F-key zooms back out.

Note: How many lines are possible? 60 to 70? This screen will be better defined later.

WB 9A

```
12345678901234567890123456789012
1                          12:30:55 1
2                                   2
3                                   3
4     WB MEASUREMENT - STORAGE      4
5                                   5
6No. DATE-YMD TIME-YMD LABEL        6
7CUR 97-10-31 15:23:11 FREMONT 1    7
8001 97-07-04 11:11:22 GOOD PAIR    8
9002 97-07-04 10:21:54 BAD PAIR     9
0003 97-06-02 22:22:31 UKIAH 1      0
1                                   1
2                                   2
3                                   3
4  VIEW      DELETE    STORE    more 4
5  LABEL     PRINT     CLR-ALL  more 5
6  RESULTS   PAGE-UP   PAGE-DN  more 6
12345678901234567890123456789012
```

20/20
G